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EXAMINER	
MOORE JR, MICHAEL J	

ART UNIT	PAPER NUMBER
2666	

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/823,871	STILES ET AL.	
	Examiner	Art Unit	
	Michael J. Moore, Jr.	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-67* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26,28-34,37-42 and 60-67* is/are rejected.

7)☒ Claim(s) *27,35,36 and 43-59* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/30/01,1/15/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims **1-67** and cancellation of claims **68-81** in the reply filed on 3/17/2005 is acknowledged.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on 3/30/2001 and 1/15/2002 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statements.

Drawings

3. The drawings are objected to because of the following informalities: In step 400 of Figure 4, the word "greather" should be "greater". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The abstract of the disclosure is objected to because on line 4, the word "very" should be "every". Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities: On page 8, in the "Brief Description of the Drawings", the description of Figures 7 and 8 appear to be missing in paragraphs 31-32. Also, on page 10, paragraph 41, line 7, "Serial No. 09/752,649" should be replaced with "U.S. Patent No. 6,888,825".

Appropriate correction is required.

Claim Objections

6. Claims **15, 25, 35, and 47** are objected to because of the following informalities:

Regarding claim **15**, "claim13" should be "claim 13".

Regarding claim **25**, the word "ring" should be "rings".

Regarding claim **35**, on line 1, a "colon" is missing after the word "comprising". Also, on both lines 4 and 5, the phrase "certain of said multi-purpose slots" should be "certain ones of said multi-purpose slots" to be more precise.

Regarding claim **47**, on line 1, a "colon" is missing after the word "comprising". Also, on line 3, the word "or" after word "set" should be "of". Also, on line 3, the word "a" is not needed between words "more" and "network". Lastly, on lines 10-11, the phrase

"certain of said plurality of line cards" should be "certain ones of said plurality of line cards" to be more precise.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims **17, 37, 38, and 60** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim **17** recites the limitation "said protection group manager class" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

10. Claim **37** recites the limitation "said TDM collector ring" in line 2. There is insufficient antecedent basis for this limitation in the claim.

11. Claim **38** recites the limitation "said TDM collector ring" in line 2. There is insufficient antecedent basis for this limitation in the claim.

12. Claim **60** recites the limitation "said single network element" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claims **1-23 and 28-34** are rejected under 35 U.S.C. 102(e) as being anticipated by Elliott et al. (U.S. 6,587,470) ("Elliott"). Elliott teaches all of the limitations of the specified claims with the reasoning that follows.

Regarding claim **1**, "a single network element including a full TDM cross-connect coupled to every line card slot in the single network element with the same amount of bandwidth connection, wherein the full TDM cross-connect is programmable on an STS-1 basis, and a multiple ring unit to simultaneously support multiple TDM rings" is anticipated by SONET network element 1460 (single network element) of Figure 14B that contains a cross-connect (multiple ring unit) that supports multiple optical rings as spoken of on column 17, lines 26-29 and further by cross-connect 120 shown in Figure 1 coupled to high-speed network interface subsystems 200 that contain multiple network interfaces operating at the same speed as spoken of on column 6, lines 17-21.

Regarding claim **2**, "wherein a line card with multiple ports can be installed in any one of the line card slots" is anticipated by high-speed network cards 400 of Figure 4A that are installed in the network rack as shown.

Regarding claim **3**, "wherein the amount of bandwidth connection is OC-48" is anticipated by the OC-48 interface card slot support spoken of on column 3, lines 29-31.

Regarding claim **4**, "wherein the line card slots number greater than 6" is anticipated by the rack of Figure 4A containing 17 line card slots.

Regarding claim **5**, "a protection group manager structure of which an instance is formed for each ring provisioned in the single network element, the protection group manager structure including, a ring ID to distinguish between the different rings simultaneously provisioned in the single network element, and a ring map" is anticipated by BLSR connection map manager 1160 of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28.

Regarding claim **6**, "an east and west protection unit to identify ones of the line card slots, as well as ports on line cards inserted in those line card slots" is anticipated by equipment & link state manager 1120 of Figure 11 that maintains information about the state of each slot, card and communications link as spoken of on column 15, lines 1-4.

Regarding claim **7**, "a line card manager structure of which an instance is created for each line card inserted in the line card slots" is anticipated by provisioning manager 1110 of Figure 11 that manages a provisioning database associated with network interface cards as spoken of on column 14, lines 51-56. "A port manager structure of which an instance is created for each port of each line card in the line card slots" is anticipated by equipment & link state manager 1120 of Figure 11 that maintains information about the state of each slot, card and communications link as spoken of on column 15, lines 1-4. "A multi-ring manager structure to store identification information regarding each ring provisioned in the single network element" and "a protection group manager structure of which an instance is created for each ring provisioned in the single network element" is anticipated by BLSR connection map manager 1160 of Figure 11

that maintains information related to ring configurations as spoken of on column 15, lines 25-28. Lastly, "a network management system interface to be coupled to instances of the line card manager, the port manager, the multi-ring manager, and the protection group manager structures" is anticipated by network management interface 1100 of Figure 11 coupled to provisioning manager 1110, equipment & link state manager 1120, and BLSR connection map manager 1160.

Regarding claim **8**, "wherein the protection group manager structure includes: a ring ID to distinguish between the different rings simultaneously provisioned in the single network element; and a ring map" is anticipated by BLSR connection map manager 1160 of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28.

Regarding claim **9**, "wherein the single network element is to transmit OAM&P information within a first set of DCC bytes of a SONET signal to a first network element that is to connect to the single network element and to transmit the OAM&P information within a second set of DCC bytes of the SONET signal to a second network element that is to connect to the single network element, wherein a size of the first set of DCC bytes is different from a size of the second set of DCC bytes" is anticipated by system communication link 352 of Figure 3 used to transport control signaling using DCC bytes 711-713 shown in Figure 7 and spoken of on column 11, lines 49-61.

Regarding claim **10**, "wherein the first network element is to be included in a first TDM ring of the multiple TDM rings and wherein the second network element is to be included in a second TDM ring of the multiple TDM rings" is anticipated by the ring

composed of ring segments 1350 shown in Figure 14B as well as the ring composed of ring segments 1450 shown in Figure 14B.

Regarding claim **11**, "wherein the single network element is to communicate to a different network element through a SONET signal such that the single network element is to communicate OAM&P information to the different network element with Data Communication Channel bytes associated with any of the STS frames within the SONET signal" is anticipated by system communication link 352 of Figure 3 used to transport control signaling using DCC bytes 711-713 shown in Figure 7 and spoken of on column 11, lines 49-61.

Regarding claim **12**, "wherein the SONET signal includes an OC-48 signal" is anticipated by the OC-48 interface card slot support spoken of on column 3, lines 29-31.

Regarding claim **13**, "a single multiplexing network including, a plurality of slots to be coupled to optical fiber of multiple TDM rings through line cards installed in the slots, a multiple ring unit to simultaneously support multiple TDM rings, and a full TDM cross-connect coupled to each of the slots with the same amount of high-speed bandwidth, wherein the full cross-connect is programmable to switch time slots between the different TDM rings" is anticipated by SONET network element 1460 (single multiplexing network element) of Figure 14B that contains a cross-connect (multiple ring unit) that supports multiple optical rings (TDM rings) as spoken of on column 17, lines 26-29 and further by cross-connect card 440 shown in Figure 4A coupled to high-speed network interface cards 400 (use same speed) using slots in the rack configuration shown in Figure 4A.

Regarding claim **14**, "wherein a line card with multiple ports can be installed in any one of the plurality of slots" is anticipated by high-speed network cards 400 of Figure 4A that are installed in the network rack as shown.

Regarding claim **15**, "wherein the amount of high-speed bandwidth is OC-48" is anticipated by the OC-48 interface card slot support spoken of on column 3, lines 29-31.

Regarding claim **16**, "wherein the plurality of slots number greater than 6" is anticipated by the rack of Figure 4A containing 17 line card slots.

Regarding claim **17**, "a protection group manager structure of which an instance is formed for each ring provisioned in the single network element, the protection group manager class including, a ring ID to distinguish between the different rings simultaneously provisioned in the single network element, and a ring map" is anticipated by BLSR connection map manager 1160 of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28.

Regarding claim **18**, "an east and west protection unit to identify ones of the plurality of slots coupled to a given TDM ring, as well as ports on line cards inserted in those slots coupled to the given TDM ring" is anticipated by equipment & link state manager 1120 of Figure 11 that maintains information about the state of each slot, card and communications link as spoken of on column 15, lines 1-4.

Regarding claim **19**, "a line card manager structure of which an instance is created for each line card inserted in the plurality of slots" is anticipated by provisioning manager 1110 of Figure 11 that manages a provisioning database associated with network interface cards as spoken of on column 14, lines 51-56. "A port manager

structure of which an instance is created for each port of each line card in the plurality of slots" is anticipated by equipment & link state manager 1120 of Figure 11 that maintains information about the state of each slot, card and communications link as spoken of on column 15, lines 1-4. "A multi-ring manager structure to store identification information regarding each ring provisioned in the single network element" and "a protection group manager structure of which an instance is created for each ring provisioned in the single network element" is anticipated by BLSR connection map manager 1160 of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28. Lastly, "a network management system interface to be coupled to instances of the line card manager, the port manager, the multi-ring manager, and the protection group manager structures" is anticipated by network management interface 1100 of Figure 11 coupled to provisioning manager 1110, equipment & link state manager 1120, and BLSR connection map manager 1160.

Regarding claim **20**, "wherein the protection group manager structure includes: a ring ID to distinguish between the different rings simultaneously provisioned in the single network element; and a ring map" is anticipated by BLSR connection map manager 1160 of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28.

Regarding claim **21**, "a network element in a hubbed network office, the network element including, a plurality of line cards, wherein optical fiber from two different rings is directly coupled to the network element through one or more of the plurality of line cards; a multiple ring unit to simultaneously support the two different rings, and a full

TDM cross-connect coupled to each of the line cards with the same amount of high-speed bandwidth, wherein the full cross-connect is programmable on an STS-1 basis and is programmed to switch certain time slots between the two different rings" is anticipated by SONET network element 1460 (network element) of Figure 14B that contains a cross-connect (multiple ring unit) that supports multiple optical rings (TDM rings) as spoken of on column 17, lines 26-29 and further by cross-connect card 440 shown in Figure 4A coupled to high-speed network interface cards 400 (plurality of line cards that use same speed) using slots in the rack configuration shown in Figure 4A.

Regarding claim **22**, "wherein one of the rings is a TDM collector ring" is anticipated by the ring composed of ring segments 1350 shown in Figure 14B.

Regarding claim **23**, "wherein another of the rings is a TDM collector ring" is anticipated by the ring composed of ring segments 1450 shown in Figure 14B.

Regarding claim **28**, "wherein at least one of the plurality of line cards includes multiple ports" is anticipated by interface card 810 shown in Figure 8 that contains multiple inputs and outputs.

Regarding claim **29**, "wherein the amount of high-speed bandwidth is OC-48" is anticipated by the OC-48 interface card slot support spoken of on column 3, lines 29-31.

Regarding claim **30**, "wherein the plurality of line cards number greater than 6" is anticipated by the rack of Figure 4A containing 17 line card slots.

Regarding claim **31**, "a protection group manager for each of the rings, each of the protection group managers including, a ring ID to distinguish between the two different rings, and a ring map" is anticipated by BLSR connection map manager 1160

of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28.

Regarding claim **32**, "an east and west protection unit to identify those of the plurality of line cards coupled to that protection group manager's one of the two different rings, as well as the ports on those line cards coupled to that ring" is anticipated by equipment & link state manager 1120 of Figure 11 that maintains information about the state of each slot, card and communications link as spoken of on column 15, lines 1-4.

Regarding claim **33**, "a line card manager for each of the plurality of line cards" is anticipated by provisioning manager 1110 of Figure 11 that manages a provisioning database associated with network interface cards as spoken of on column 14, lines 51-56. "A port manager for each port on the plurality of line cards" is anticipated by equipment & link state manager 1120 of Figure 11 that maintains information about the state of each slot, card and communications link as spoken of on column 15, lines 1-4. "A multi-ring manager to store identification information regarding the two different rings" and "a protection group manager for each of the two different rings" is anticipated by BLSR connection map manager 1160 of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28. Lastly, "a network management system interface coupled to each of the line card managers, the port managers, the multi-ring manager, and the protection group managers" is anticipated by network management interface 1100 of Figure 11 coupled to provisioning manager 1110, equipment & link state manager 1120, and BLSR connection map manager 1160.

Regarding claim **34**, "wherein each of the protection group managers includes: a ring ID to distinguish between the two different rings, and a ring map" is anticipated by BLSR connection map manager 1160 of Figure 11 that maintains information related to ring configurations as spoken of on column 15, lines 25-28.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims **24-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Elliott et al. (U.S. 6,587,470) ("Elliott") in view of Ben-Zur et al. (U.S. 6,754,174) ("Ben-Zur").

Regarding claims **24 and 25**, Elliott teaches the apparatus of claim **22**. Elliott does not explicitly teach a WDM or DWDM metro collector ring and metro core ring.

However, Ben-Zur teaches a SONET trans-metro system 200 in Figure 2 that contains a DWDM core ring connecting to an OC-48/192 collector ring through a trans-metro optical switch 202. At the time of the invention, it would have been obvious to someone skilled in the art to combine the DWDM ring teachings of Ben-Zur with the multiple ring system of Elliott in order to provide multiple ring support in a MAN environment.

Regarding claim **26**, Elliott teaches the apparatus of claim **21**. Elliott does not explicitly teach the connection of customer premise equipment to other network elements within a ring. However, Ben-Zur teaches a trans-metro optical system in Figure 3 that shows customer locations 310 connected to a ring through trans-metro optical switches 302. At the time of the invention, it would have been obvious to someone skilled in the art to combine the CPE teachings of Ben-Zur with the multiple ring system of Elliott in order to provide multiple ring support to end users.

Allowable Subject Matter

18. Claim **27** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. Claims **35, 36, and 39-59** are allowable over the prior art of record.

20. Claims **37, 38, and 60-67** would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

21. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim **27**, the prior art of record teaches the apparatus of claim **26**. The prior art of record fails to teach network elements that are coupled to customer premise equipment by TDM access rings.

Regarding claim **35**, the prior art of record fails to teach multi-purpose slots acting as access interfaces that are coupled to customer premise equipment with TDM access rings. The prior art of record also fails to teach where the sum of the bandwidth to the access interfaces is greater than the sum of the bandwidth to the aggregation interfaces, and where the full TDM cross-connect grooms traffic on the access interfaces to the aggregation interfaces.

Regarding claims **36-46**, these claims are further limiting to claim **35** and are thus also allowable over the prior art of record.

Regarding claim **47**, the prior art of record fails to teach where the sum of the bandwidth between the full cross-connect and the plurality of line cards is greater than the sum of the bandwidth between the full cross-connect and the set of line cards.

Regarding claims **48-59**, these claims are further limiting to claim **47** and are thus also allowable over the prior art of record.

Regarding claim **60**, the prior art of record fails to teach a plurality of TDM access rings used to connect customer premise equipment to line cards of a network element.

Regarding claims **61-67**, these claims are further limiting to claim **60** and are thus also allowable over the prior art of record.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lu (U.S. 5,412,652), Roberts et al. (U.S. 6,188,667), Mekkittikul et al. (U.S. 2005/0013248), Martin et al. (U.S. 6,205,158), Lauder et al. (U.S. 2002/0135835), and Makam et al. (U.S. 2001/0033570) are all references pertinent to this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571) 272-3168. The examiner can normally be reached on Monday-Friday (8:30am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael J. Moore, Jr.
Examiner
Art Unit 2666

FRANK DUONG
PRIMARY EXAMINER

mjm MM